EXERCISE AS AN ADDICTION: UNDERSTANDING RELATION WITH STRESS, EATING DISORDER AND BODY IMAGE AMONG FEMALE AMATEUR RUNNERS

A

Synopsis

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Abstract

The component model of Exercise Addiction (E.A.) is like that of psychoactive substance addiction. An individual suffering would maintain a rigorous exercise routine, be preoccupied with it, and continue to do it even though they are injured and despite knowing that further exertion is harmful to physical and psychological health. People suffering from Exercise Addiction refuse to stop exercising even when they want to. These individuals aim to spend more calories to lose weight, use exercise to change their mood and be obsessed with body shape. Eating disorders, Body-image, and stress issues are growing concerns in females globally. These variables further supported a strong link with Exercise Addiction in the scientific studies that support runners. However, limited studies addressed all three variables combined together concerning Exercise Addiction in runners. In female runners eating disorders, body image, and stress are secondary addictions with primary Exercise Addiction. This study seeks to understand Exercise Addiction in female amateur runners aged 21-55 from Delhi and NCR with relations to stress, eating- disorders, and body image.

The sample consists of 323 females who regularly participate in long-distance events. The Mixed-methods research approach selected for this study, quantitative to qualitative sequence, is applied. The objectives of the research are descriptive and exploratory. A Multistage sampling technique (purposive sampling) will be used. Exercise Addiction Inventory(EAI) by Terry et al.,2004) , Eating-Disorder Examination Questionnaire (EDE-Q)(Fairburn & Biglin, 2008), Perceived Stress Scale (PSS)(Sheldon Cohen, 1983), and Appearance Anxiety Inventory (AAI)(Veale et al.2014) will be used for Quantitative data and analysed through SPSS. For qualitative data collection, focus Group discussion (6-8) and observation methods will be applied to collect data for Qualitative analysis on those having Exercise Addiction. It has been hypothesised that all the above variables correlate highly with Exercise Addiction as a precipitating and perpetuating factor.

Keywords:Female amateur runner, exercise addiction., eating disorder, stress, body shaping.

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1 Introduction

At present, Exercise Addiction. is not given pathology status in DSM-V(American Psychiatric Association. 2013 or ICD-11(Del Barrio, 2017) due to a research deficit on this topic. But this has not stopped many from exploring this dysfunctional pattern of exercise as a significant problem, even though it is relatively rare compared to other addictions. It is a poorly studied condition, as the sufferer might go to an orthopaedic doctor or physiotherapist rather than a mental health professional (Sadock et al.,2016). Unmindful of this comparison, this problem needs attention. According toliterature, "Exercise Addiction was between 3to7% in regular exercisers and among university students (6 to 9%)" (Marques et al.,2018). The condition could be severe, as professional players or others in sports could be silent sufferers. The prevalence could be higher among those who are, for some reason, dependent upon sports (Lichtenstein et al., 2021).

Studies in the USA alone showed that 3% of adults are exercise-dependent (Exercise Addiction and Related Health Conditions: Statistics & Treatment, 2022). Exercise Addiction develops into compulsive passion and dedication in athletes more than the general public. As per "Exercise Addiction and Related Health Conditions: Statistics & Treatment",(2022), "25% of marathon runners, 50% of ultramarathon runners, 52% of triathletes, 14.2 % of endurance athletes, and 8.2% of fitness-centre goers have an exercise addiction". In addition to exercise addiction. as a primary factor, the secondary addiction factors supporting exercise addiction are Anorexia and Bulimia eating disorder, muscle dysmorphia, and obsessive-compulsive disorder (Lichtenstein et al., 2017). A survey study done on British students mentioned that nearly 6.9% of students in sportshad exercise addiction, and also that eating disorders, and body dysmorphic disorder is prevalent in female students who were exercise dependent.(Szabo & Griffiths, 2006)and Alcaraz-Ibáñez et al., (2018) explained that exercise dependence linkage with "expression for bursting emotions and its regulation"

Exercise Addiction.'s health concern failed to be recognised by a larger population as the importance of exercise for a healthy body has existed since ancient times (Hespanhol Junior et al., 2015). Medical and para-medical professionals use any form of physical activity to treat mental health and physiological problems. The pandemic has also highlighted this importance (Lim & Pranata, 2020**;** Nogueira et al., 2019**).** Numerous authors have also suggested that workouts may protect against paralysing depression and self-punishment or as a way to cope with poor emotions, including tension, anger, or melancholy. Research has reported the advantages of physical activity for

improved health and well-being (De Mello et al., 2013). Due to these reasons, exercise as a Behavioral Addiction has not been seen negatively, even if it distresses those one going through it. Loneliness and anxiety may lead one to depend on exercise, and viceversa (Lukács et al., 2019).

This study will study female amateur long-distance runners taking up recreational running, linked to higher mental and physical work for primary and secondary reasons, and its conversion from normal to dysfunctional patterns. The benefits of running have attracted many people globally(Pedisic et al., 2019). In India alone, 11,805 females participated in the 2020 Tata Mumbai marathon (H.T. Correspondents, 2023). Individuals from homemakers to working executives, college students, doctors, and engineers participated in road running (H.T. Correspondents, 2023). At present, 1579 timed marathons take place in India. Running is now the second fastest-growing sport after cricket. Participation happens from all spheres, and every year there is 10% increase in female participation in long-distance running in India(Women on the Rise in India's Road Running Boom, Naik, 2020, Distance Running Magazine, 2022 *Edition 4)***.** However, it is also a fact that regular participants end up doing dysfunctional exercise patterns underneath eating disorders, body image, and stress that support this behaviour (Król et al., 2022; Lukács et al., 2019).

1.1. Defining exercise as an addiction.

William Glasser coined the term exercise addiction in 1976 (Glasser, 1976) to define the positive effect of exercise. Soon after, in 1979, Morgan described the harmful effects of exercise addiction, calling it"dysfunctional exercise"(Morgan, 1979). De Coverley Veale(1987) further classified itinto"primary and secondary formsof exercise addiction" (Egorov, A.Y., & Szabo, A., 2013) .The primary is when the subject is addicted to exercise for only dopamine factor. The secondary effect is due to an eating disorder, weight control, or stress relief for which the subject undertook an exercise to deal with or cope (Freimuth et al.,2011). This type of exercise is "obligatory" (Alcaraz-Ibáñez et al.,2022; Chapman, 2020; Al-Saaraf et al., 2018).

"Exercise Addiction" is not an official disorder and hence not treated separately in DSM-V (Diagnostic and Statistical Manual of Mental Disorders; Pinna et al.,2015) but given a place in behavioural addiction. It all started with DSM-IV-TR (American Psychiatric Association, 1994), in which exercise excess has been termed as the exercise behaviour that significantly interferes with one's life that one keeps doing even when the person is injured. Mostly, athletes in pain only see physiological causes, not the psychological side of the problem. They failed to recognise that they were utilising their own bodies to achieve a dopamine high, as is common in substance use disorders (Torstveit et al., 2019).Because of the effects of exercise on the nervous system, the

neurotransmitters and neurochemicals released in runners are termed “runner’s high” (Torstveit et al., 2019). The purpose of these chemicals is to create a joyful or satisfying state of mind. The pleasant effects of exercise on the brain wouldlead to addictive behaviour(Szabo et al., 2015). The damage so defined, in turn, induces an urge to behave in ways capable of activating the reward circuit or avoiding discomfort, ignoring the associated negative consequences of the specific behaviour. The so-called “incentive sensitisation theory” has been said to underline the emergence of substance use disorders and is found to be the same as pathological fixation with physical activity (Szabo, A. 2018, Szabo et al., 2015).

Problems with eating and poor self-opinion are two of the most common factors. People addicted to exercise are similar to those hooked to other substances; they maintain a rigorous exercise routine, become preoccupied with it, and continue to do it even though they are injured when further exertion is bad. These individuals also refuse to stop exercising even when they want to, aim to burn more calories to lose weight and continuously fear that in the absence of exercise, they might lose the body they gained. Hence, individuals with exercise addiction develop an obsession with physical fitness and exercise, along with a feeling of guilt when they cannot exercise (Terry et al.,2004; Kurimay et al., 2013). It can be related to body image disorders, eating disorders, or daily stress due to taking exercise-related supplements and using the equipment.In the literature, several terms and descriptions describe exercise as a problem behaviour. These are “obligatory exercise” (Davis et al., 1993), exercise addiction (Freimuth et al., 2011), “exercise dependence” (Coverley Veale, 1987), “exercise abuse,” “excessive exercise,” and “compulsive exercise” (Calogero & Pedrotty, 2004).

1.2. Exercise Addiction as Behaviour Addiction

Out of several behavioural addictions like gambling disorder, internet gaming disorder, internet addiction, food addiction, hypersexuality, shopping addiction, and tanning addiction as listed in the “Diagnostic andStatistical Manual of Mental Disorders IV-TR” (DSM-IV-TR), exercise addiction was one of them (American Psychological Association, 1994). Partly due to ambiguity concerning the comorbidity of mental disorders, at first glance, individuals at risk of exercise addiction failed to get a separate mention in the medical books. In addition, a lack of preliminary research on the same, failed to get it recognised in the DSM-V and ICD-11 (Weinstein & Szabo, 2023). Even though, the symptoms are at par with substance addiction disorder, or “Behavioural Addiction” based on “Brown’s addiction theory”(Brown,1993; West and Brown 2013). These traits supported Griffiths’ “exercise addiction model” (Griffiths, M.D., 1997).

One cannot deny the harmful side of exercising that can rattleday-to-day functioning (Landolfi, 2013; Szabo, 2015; Lichtenstein et al., 2017). Case studies show that people with problematic exercising patternswho frequently exercised without rest, felt that they could not reduce exercising, even despite illness, injury, and social conflict, and go through "withdrawal symptoms" in the absence of exercise (Bamber, Cockerill & Carroll, 2000). Incorporating qualitative research in the area that helps people whoreport mental suffering due to exercise habits (Kolnes et al., 2016; Müller et al., 2015).

About 3% of people interacting in an everyday physical pastime are relying on workouts for mood change, as stress busters, and for other psychological reasons that could be called exercise-dependent (Berczik et al., 2012). Moreover, exercising-dependent people are prone to repetitive injuries, which threaten their physical and mental health (Hausenblas and Giacobbi 2004; Lichtenstein et al., 2017). But many of them ignore signs of injury as a physio-problem rather than dysfunctional behaviour leading to resistance in seekingtreatment(Lichtenstein et al., 2017).

1.3. Exercise as a strategy to deal with the everyday pressure of life (stress)

Stress is an extreme undertaking for everyone in regular life. Sports have proven tobe a coping approach. (Pinto et al., 2019). In sense exercising has become a favourite part of the modern lifestyle. Furthermore, several studies have observed that workouts tend to persuade strain responses, similar to studies and research on alcohol and drug abuse (O'Brien et al., 2017). In this example, alcohol or drug users often emphasize the fundamental benefits of recreation. Several previous studies have examined the positive outcomes of physical activity and how it is vital for positive coping with mental health issues, especially depression and anxiety (Kriswanto E.S. et al.,2019). The increased oxygen level while exercising has helped to reduce depressive features significantly (Parastatidou et al., 2016; Scully et al., 2016; Corazza et al.,2019; Kriswanto E.S. et al., 2019).

How excess exercise impacts mental state remains under-researched. Landolfi (2013) proposed that there is underneath guilt that might manifest symptoms that cause psychological suffering. These people tend to struggle with terrible outcomes for their mental fitness (Berczik et al.,2012). Therefore, examining the mechanisms through which workout dependency affects mental distress is relevant.

1.4. Define Eating Disorder co-existence with Exercise Addiction

The study by Godoy-Izquierdo(2016) observed that dissatisfaction with the body was positively correlated with exercise dependence. Due to the higher social pressure on women to look good, females have a higher risk of developing an unhealthy reliance on exercise (Godoy-Izquierdo et al.,

2021). The original purpose of the exercise is lost when a female recreational runner's exercise compulsion is a link to the secondary conditions of eating disorders, disturbed body image, and relief from stress (Costa et al., 2016). Research by Hockin-Boyers & Warin in 2021 has mentioned that females who exercise in excess also tend to have eating disorders, and the mediating factor is body shape. Exercise is to cope with stress, but exercise addiction can add to existing stress (Wågan et al., 2021). Further, instead of leading to healthy food habits, exercise addiction might increase dependence on supplements that are readily available in the market, targeting females who have an eating disorder or vice-versa (Sussman et al., 2011; Plateau, C. R., Arcelus, J., & Meyer, C.,2017). Researchavailable with regard to"secondary exercise addiction"showed excess excising is usually associated with eating disorders such as anorexia nervosa and bulimia nervosa (Freimuth et al., 2011).

Female athletes who exercise compulsively have eating disorder, and they have obligatory exercise to maintain the pathology (Fan et al., 2021). Further, this study emphasises that obligatory exercisers do not respond to exercise addiction treatment (Freimuth et al., 2011). A survey by Hockin-Boyers and Warin (2021) found that sportspersons with exercise addiction have protein shakes as a routine practise instead of a balanced diet. Supporting the idea that exercise is dysfunctional with eating disorders and hence causes exercise addiction and vice-versa. Athletes frequently experience clinical eating disorders, yet little research has been done on seeking and receiving treatment for an eating problem, thus leaving them unnoticed and left to suffer (Godoy-Izquierdo et al., 2021).

1.5. Body Image and Exercise Addiction

Body mass and weight are physiological measures, but psychologically, women who exercise are said to be happier about their appearance than those who do not (Weinstein & Weinstein, 2014). The consciousness of precise body frame measurements and better emotional reactions is greatly outward facing (Hausenblaus &Fallon, 2002). As per studies, women are more dissatisfied with their own bodies than men. They are more influenced by social media and peer judgement. For example, seeing a photo of a model on social media, she might resort to pathological behaviour in order to achieve that "ideal body" (Costa et al., 2011;Freire et al., 2020). Studies have shown a strong relationship between body shape and exercise addiction and a mediating eating disorder (Hausenblaus et al., 2012).

1.6. Physical activity and women

In general, an increasing number of people are adopting simple forms of physical activity, such as running, daily. In a study by Sarah Knapp (Knapp et al.,2023), “Exercise Addiction could be a way to escape from stress or an undetected emotion, but at the root of this addiction in females are concerns regarding body shape, thin posture, and an eating disorder.”

Recently, more females have adapted to running as a part of their daily activities to reduce depression or other internalising mental problems that affect women more than men (World Health Organisation, 2018; Scheerde et al., 2015; Runningwithgrit, 2022). Exercise has also given them a new identity and status in life with the added benefit of a fit body, fat loss, and age-related problems. Recent studies have shown that exercising in women with depression or anxiety has a positive effect. Depression and insomnia could also be treated by consistent physical activity, helping break the cycle. Exercise relaxes muscles due to sensations like feet hitting the ground, rhythmic breathing, and the way the wind feels on the skin (Shin, 2020). When women add the mindfulness component of paying attention to their bodies and how they feel when exercising, they can expect benefits for their physical and mental well-being (Moreno et al., 2019).

Despite the positive effects of exercise, do not forget that exercise can also cause stress in females. Immoderate physical activity might cause stress that could lead to depression and anxiety, depending on the need for which a female exercise (Schüler et al., 2018 ; Roger et al.,2011). In literature, there are numerous examples of runners, who, irrespective of injuries, endorse that they should lessen or observe day breaks from running instead of stopping. Further, 49% of females do obligatory workouts, which blanket excessive challenge, ego dreams, and factors of neurotic perfectionism, while 27% of adult males have a secondary dependency (Schüler et al., 2018; Covington, 1992). In runners, especially long-distance runners, exercise addiction ranges from 3 to 42% (Nogueira et al., 2018).

1.7. Exercise-Addiction Symptoms

The addictive components of exercise identified by Sachs, (1981) and Griffiths (2005) are “salience,mood modification,tolerance,withdrawal symptoms,conflict, andrelapse.”(Griffiths ,1997,2005, 2007 ; Kurimay et al., 2013). Szabo (1995) and Kurimay et al., (2013) suggested that addicted exercisers experience more severe withdrawal symptoms than committed exercisers. They felta distressing feeling of deprivation when they could not exercise (Szabo, 1995; Kurimay et al. (2013). Exercisers exercise at the cost of their physical, mental, occupational, and social functioning, affecting their daily lives.Individual incapability to perform in two out of four areas above mentioned

is consideredto be fit for a diagnosis (Bamber, 2003).The symptoms pertaining to withdrawal serve as the basis for diagnosis ((Bamber, 2003).

Some other symptoms that define dysfunctional exercise patterns are:

- Exercising even when it is harming the body (regular injuries due to over-exercising).
- Engagingin behaviour despite waiting to stop.
- Obsession with behaviour (excessively exercising).
- Dependence on pleasure response (runner's high).
- Withdrawal symptoms include emotional outbursts, anxiety, and negative feelings toward the self.
- Irritability.
- Feeling buzzed after exercising (feeling constantly tired).
- The uncontrollable desire to exercise.

In addition, "compromisingother pleasurable activities to make time for exercise, spending extended periods preparing, recovering, and training,and experiencing an inability to reduce exercise routine" are also some of the symptoms.

1.8. Long-distance Runner and Exercise Addiction

Running is a much sought after physical activity practised by people striving for sound health and mind (Stamatakis & Chaudhury, 2008). For reasons such as being not difficult to start, socially acceptable, relatively cheap, and having tremendous benefits (Ottesen et al., 2010). In addition, the popularity and accessibility of running events to non-runners have contributed significantly in encouraging and improving an active lifestyle that has health benefits for the masses (Ottesen et al.,2010). Anyone can run, and there is no need for great infrastructure to do so. In addition, it also ensures a low risk of lifestyle-related diseases.

Long-distance running is running continuously for more than 3 kilometres. This type of running necessitates both physical and mental stamina. Breathing is vital in long-distance running because it provides energy to the body by utilising the oxygen present; it is called aerobic respiration and anaerobic respiration when oxygen is depleted, and there is a desire to accelerate to a higher intensity (Nogueira et al., 2018).

Running for longer durations in marathons creates exercise dependence(Yates et al., 1983). The training activities likely place runners under many bodily and mental stressors, which could lead to dependence on exercise, particularly distance running (Hespanhol Junior et al., 2015).

Van Middelkoop et al. (2008) reported that runners suffered about 28% of low-impact injuries from continuous running for a month, two months, or after one marathon. However, it is doubtful that this is only due to running, but most likely due to training. Increased training and volume per week are directly associated with the addictive behaviour of exercise (Berezik et al., 2012; Hausenblas and Downs, 2002a, b). People involved in long-distance running are at risk of musculoskeletal injuries (Lopes et al., 2012; Gallo et al., 2012; Van Gent et al., 2007; Van Poppel et al., 2014).

Blaydon & Linder (2002) pointed out that dependence on exercise is higher among athletes, irrespective of elite, sub-elite, or recreational runners. As per his study, nearly 43.3% of amateur runners and 64.3% of professional athletes were having an exercise addiction. In addition, exercise dependence in males is mainly primary, i.e., exercising is very important in their lives and they make changes in their daily functioning to suit for physical activities, whereas in females running and eating disorders go hand in hand.Female athletes with secondary dependence on exercise have eating disorder pathology, amounting to 50% in comparison to 27% in males (Blaydon & Linder,2002).

In Long-distance running, there is a 25% chance to developing exercise addiction with added discomfort from frequent injuries(Maceri et al., 2019). A problem that causes more suffering to amateurs as they are ignorant and run despite injuries that thus take longer time to heal, leading to mental agony (Maceri et al., 2019).

1.9. Rationale

A recent study in India in 2021, “Exercise as an Addictive Behaviour: Implications for Building Awareness in the community,” by the “National Institute of Mental Health & Neuroscience, Bengaluru” (NIMHANS), funded by the “Indian Council of Medical Research” (ICMR), New Delhi, was an effort to understand exercise behaviour in the Indian context. It emphasised the growing need to comprehend dysfunctional exercise behaviour. It has been found that 8.8% of the Indian population doing some form of exercise regularly, as documented in this study, had exercise addiction. Hence, there is a need to explore more psychological factors. Further, there is a need to understand, in the Indian context, how running has become so popular and has put more weight on exercise addiction. Somehow, there is limited quantitative and qualitative data on exercise dependency. These further supports exploring the determinants of exercise addiction in females. In India, 3.8% of females are at threat of exercise addiction. And it perhapsbe more if studied sports specific. (Kumar Sharma, 2019).

A research paper by Lopez et al. (2019) on exercise addiction in Competitive amateur runners published in the International Journal of Mental Health and Addiction revealed that long-distance runners have the highest potential danger of developing the addiction (Lichtenstein et al.,2021; Martin et al., 2017; Cetin et al.,2020). Female marathon runners reportednotably higher level of exercise addictionthan male marathon runners when a questionnaire was used to check the same (Alcaraz-Ibáñez et al., 2022; Pierce, Rohaly, and Fritchley,1997). This number is even higher in endurance runners(Lassner et al.,2022). In a study of 72 endurance runners, 19.4 % of females had exercise addiction (Lassner et al.,2022).

The need to study females' exercise addiction is imminent, as most research that informs education programmes, workout regimes, dietary tips, cognitive interventions,injuryprevention and rehabilitation programmes explicitly involve male individuals. In addition, as recreation remains largely male-ruled, inter-course discrimination, gender inequality, gender bias, and gender stereotyping are maintained (Alcaraz-Ibáñez et al., 2022; Chapman, 2020).

The possible reason for the higher prevalence is that females whoovercome the social biaspertaining tophysiological activity have higher self-esteem (Alcaraz-Ibáñez et al., 2022). Another possible explanation for females' higher exercise addiction is, its relation to eating disorders and controlling weight (Alcaraz-Ibáñez et al., 2022; Chapman, 2020; Al-Saaraf et al., 2018). Finally, this behaviour is supported by the need for a perfect body that gains social affiliation (Corazza,2019).

Exercise addiction in females has become eminent, as in 2018, 50.24 percent of runners were females; that time, they surpassed male participation (ŽIVČIĆ TOMIĆ et al., 2022) (Runningwithgrit, 2022). Moreover, 55,000 runners participated in the Tata Mumbai Marathon and a record 11,805 women competed in all race categories (HT Correspondents, 2023). Every year there is an increase of 10% in female participation, and after the pandemic, there was a 28% increase as per NEB data from an event organiser for the Delhi Marathon (HT Correspondents, 2023); over 45% female participation was recorded in 2019 in the U.S. (DeLuca et al., 2022).

There have also been reports of gender variations in athletes' test results for different outcomes, including addiction symptoms, quality of life, and mood indicators. According to research by Pierce et al., (1997) &Dumitru et al., (2019), the importance of greater methodological diversity to achieve a greater understanding of female athletes' experiences with mental health and mental illness has been mentioned in recent studies. Adequate knowledge about individual differences in the symptoms and assessment of this addiction is limited (Szabo et al.,2016). The current state of the literature is inadequate to study female athlete populations, whether elite, professional, or recreational (Perry et al.,2021;Weinstein & Szabo, 2023). Understanding female distress and know-

how will help to make exercising a utility. It will offer scientific underpinning to female runners and their exercise behaviour and provide applied practise for the exercising female.

Several studies have focused on the benefits of exercise on physical health, but few have focussed on excess exercise in females. The adverse effects of exercise could lead to eating disorders, body image pathology, and stress. In addition, it leads to a compulsion to exercise and thus harms females' subjective and psychological well-being (Kolnes et al., 2016).

Theaim of this study is to understand Exercise Addiction in the Indian population, where few studies are available, especially regarding females (Kumar Sharma et al., 2019). In addition, to determine the relationship between exercise addiction, stress, eating disorders, and body-image among adult Indian female amateur runners. As of late, long-distance running has mushroomed in India, especially in metros, and the participation of women has also increased. Mental health problems in Indian women have always been of great concern to researchers. Mental health professionals prescribe physical activity for treatment (Outar, 2018). Under this condition, they prefer to exercise regularly, which benefits their mental and physical health. This positive outcome could influence their mindset towards regular exercise and make them addicted (Elliott-Sale et al., 2021). This strong emphasis on physical activity and exercise (Lichtenstein et al., 2017) can affectfurther cases of exercise addiction, especially in those ignorant of the problem and its effects (Jacky Forsyth, C.-M. R., 2018; Lim et al., 2020; Lim, 2021). Thus, analysing the impact of exercise addiction as a compulsive or obligatory behaviour in the presence or absence of stress, eating disorder, or body image, and the relation of stress and how it can be critical considering Indian women. In today's world, where stress is the biggest problem, we cannot rule out its effect on homemakers and bread-earner females' ability to cope with this (*Integration of Mental Health and HIV Interventions*, 2022, WHO). The females in India who are playing several roles in their lives by adopting a psychological approach that includes exercise physiology and psychology, could help in exploring how beliefs about the self, lead to exercise addiction and its maintenance.

An increase in the number of long-distance female runners and running events and the recent mushrooming of supplements for females targeting runners in India could enhance the problem of eating disorders and other physiological issues (Sports Nutrition Market Size & Trends Analysis Report, 2030, 2023). This study could help female sportspersons, female sports researchers, trainers, workout technological know-how, women's recreation researchers, sports scientists, power and conditioning teachers, game psychologists, physicians, and physiotherapists working with female athletes. This study will explore the experiences of performing compulsive exercise by women with an eating disorder, body image issues and stress and the sense they make of these experiences in the

context of their daily lives and treatment programme to obtain an effective conclusion (Hausenblas and Downs, 2002 a, b).

2 Literature Review

Though exercise has several advantages, it has an amazing effect on mental and physical health (Glasser, 1976). But at the same time, doing it in excess could lead tocompulsion, turning exercising into something harmful for the body (Morgan, 1979). It is a budding area of investigation for a mental health professional to understand the constructive effect of exercise on dysfunctional patterns (Bircher et al., 2017).

- **Kumar Sharma et al., (2019)**

  A recent study in India in 2021, "Exercise as an addictive behaviour: Implications for Building Awareness in the community," by the "National Institute of Mental Health & Neuroscience, Bengaluru", funded by the "Indian Council of Medical Research, New Delhi", was an effort to understand the exercise as an addictive behaviour for the first time in the Indian context. When denied the opportunity to exercise, the exercisers reported withdrawal symptoms such as irritability, insomnia, and other negative moods, in turn affected their daily functioning. Exercise Addiction affected 8% of gym goers. In India, 5.8% of males and females, 3.8 % were at risk of Exercise Addiction. And in general, 3% of the population doing any form of exercise was discovered to have Exercise Addiction. This study was not sport specific. It has been highlighted that there is a need to study psychological factors that play a vital role in developing exercise addiction, especially in females.

- **Lichtenstein & Hinze, (2020)**

  In some individuals, exercise may evolve into anobsession and eventually cause mental and physiological discomfort. Exercise Addiction in female runners is the least researched. Females with eating disorders and other psychological comorbiditiesand risk profileshad specific personality-traits, including perfectionism, narcissism, and compulsiveness, which supporting a dependence on extra exercise. In addition, 28% of runners suffered low-impact injuries from continuous running within one month, two months, or after one marathon. There is a strong association between running and addiction due to the amount of time spent on the activity. (For an amateur runner, it takes around 2 to 3 hours to complete a half-marathon (21.095 km) and 4 to 5 hrs for a full-marathon (42.195 km).

- **Corazza et al., (2019)**
- "Exercise Addiction, body dysmorphic disorder, and other image-related psychopathological problems have a correlation with fitness. A cross-sectional study" by Corazza in (2019), pointed out that a "fit body has become synonymous with success". Unfortunately, a society that perpetuates the pursuit of a perfect appearance is also challenging to achieve, thus making ground for the development of exercise addiction and other disorders like body dysmorphic disorder (BDD), eating disorders, and stress-related problems"(Corazza et al., 2019). Corazza et al.,(2019), investigated the relationship between anxiety related with looks, BDD, use of performance-enhancing supplements, and a possible connection between eating disorders and body-shape and exercise addiction, emphasised that females mostly attach their self -esteem to how she looks, end up doing "obligatory exercise" to achieve that. As per this research, 47.2% females involved in any kind of sport had body-dysmorphic, and 39.5% were using performance enhancers without guidance and advice from professionals (Corazza et al.,2019).

- **ŽIVČIĆ TOMIĆ et al., (2022)**

This study described running as a common aerobic physical activity that is mainly done toimprove health. Yet, this positivity about of running often masks an addiction that can hamper an individual's physical, mental, and social functioning. Importantly, a thinline separates committed athletes from becoming running addicts, those who work for achieving "runner's high". In running addiction, the difference between males and females is 48% to 52%. In addition, running addiction which significantly affects psychological health, also affects physical health due to nutritional supplements used without proper guidance and advice (71.43%, p =.001). As per ŽIVČIĆ TOMIĆ et al., 2022, "the risk for addiction was significantly positively associated with the use of dietary supplements, the length of the race, and the frequency of injuries were also positively correlated". The conclusion drawn, is that "running is a high-risk sport for exercise addiction and itsprogress" (ŽIVČIĆ TOMIĆ et al., 2022). Excess running harms are significantly more (100 %, p=0.013) than the other groups. The pandemic also saw more females going running than going to the gym. An increase of 25% at this time increased the possibility of risk as COVID highlighted a strong need for an active life. At the same time, educating the community who took running without proper knowledge of the adverse effects of over-training, prevention of complications from injuries, and seeking the required help is inevitable. An increase in females' participation in long-

distance events should be studied, and underneath reasons should be explored ŽIVČIĆ TOMIĆ et al., 2022).

- **Nogueira et al., (2019)**

  A study on "Exercise Addiction in Practitioners of Endurance Sports" examined compulsive exercise habits pertaining to running and stamina (needed for a particular sport) because Exercise Addiction is still a contentious issue. Most studies in this systematic review have found marginal difference between men and women in the context of practicing endurance sports; nonetheless with intense zeal and devotion could be areasonfor the formation of exercise addiction. In females, the presence of compulsion and anxiety manifested regarding their beliefs about their look and body frame (Nogueira et al., 2019).Due to ambiguity in terms used to define negative aspects of exercise and the wide range of instruments available to measure them, the prevalence rate might vary significantly between studies, with values cited ranging from 3 to 42%(Nogueira et al., 2019). Exercise addiction is not yet regarded as a behavioral disorder because it is evident that there are difficulties in describing, classifying, and diagnosing this behavior. Long-distance running that requires long training hours and pressure to improve with every run could cause uncalled exercise behaviour(Nogueira et al., 2019).

- **Weinstein, A. and Weinstein, Y. (2014)**

  The exercise addiction theory has rewarding andobsessive-compulsive elements. According to biotic studies, activity like running arouses the dopaminergic mesolimbic systeminitiating . The "runner's high" or "euphoric feelings" received throughthe reward system couldturn it into Exercise Addiction, well explained by the association of endorphins and cannabinoids with running. According to genetic studies, the same genes that regulate drug preference also restrict the selection for naturally rewarding actions like exercise. Regarding reward, habit, social support, stress alleviation, avoiding withdrawal symptoms, and anxiety reduction, exercise addiction is a step in the progression of physical activities that starts with recreational exercise and progresses to risky exercising for health. The growth of Exercise Addiction and its co-morbidity with other disorders related to mental health, such as eating disorders or neurological "substance use and alcohol disorders", should be considered at diagnosis and treatment stages of exercise addiction, while dealing with specific genders(Weinstein, A., & Weinstein, Y. 2014).

- **DELIA C. DUMITRU and TEONA DUMITRU, ANTHONY J. MAHER (2018)**

  ”Exercise Addiction: examining gender differences”, “Journal of Physical Education and Sport” by DELIA C. DUMITRU et al; (2018),provided information (participant numbers, percentages, averages, and standard deviations) about thedistinction between male and female in the chronicity,regardingexercise addiction. Indicating that men are more physically addicted than women and women outnumbered men psychologically. However, this study found that more research is vital to fully comprehend the gender variations in exercise addiction, its prevalence, and the characteristics of this putative condition. For reasons that none of the existing theoretical models is good enough to explain what causes“exercise addiction”due to reason that differ from person to person in taking up this behaviour.

  In conclusion, this study proposes that when studying exercise addiction, gender should be treated separately because there are significant differences in physical activity when women’s behaviours are compared to men’s’. In addition, most of the research focused on screening tools. The instruments, however, only measure the prevalence of exercise addiction The very nature of thephenomenon in identifying the sufferer and thus planning treatment for those individuals requires more research.

- **The prevalence rate among runners of Exercise Addiction is 3 to 6 %, as per a study by (Szabo et al., 2016)** in regular exercisers and could be higher among endurance exercisers, which could be 20% in athletes and those who participate in athletic events. However, the prevalence of “exercise addiction”is the same for both sexes. In their study, Youngman and Simpson (2014) stated that males have more exercise addiction than females. There are other studies explaining females have dependence. But few studies have been conducted in terms of gender difference and that too on professional athletes who competed in endurance races, leaving doubt that the differences between men and women might not bemuch, compared to other studies that include recreational exercisers(Youngman and Simpson,2014). Women enjoy recreational sports (European Commission, 2018). Previous research using different instruments to measure exercise addiction found that women athletes competing in long distance, stamina induced races had higher levels of exercise addiction than men.

- **Wågan, et al., (2021)**

  Wagan(2021) found strong associations between self-esteem, psychological stress, and the risk of exercise dependence. In an article in the *International Journal of Environmental*

Research and Public Health under the heading "**Psychological stress and risk of exercise dependence,"** Wagan,F.A. wrote that body concerns and stress-related disorders are becoming more prevalent among the younger population in various countries. Although studies have found links between self-worth, exercise dependence, self-esteem, and stress, few have considered all three variables in relation to one another. The current study investigated whether high levels of psychological distress and low levels of self-esteem may be risk factors for developing exercise dependence by exploring the relationships between self-esteem, psychological stress, and exercise dependence. Wagan(2021) studied weekly exercise, age, and gender and found that the variables self-esteem, psychological distress, and exercise dependence were all significantly correlated. Those who exercised for more than nine hours per week had significantly higher stress and exercise dependence symptoms with lower self-esteem than the other groups (PedersenA.V.,2021). "First, the exciting literature was expanded by demonstrating the co-existence of low self-esteem and high levels of psychological distress in individuals at increased risk of developing exercise dependence. Second, even after controlling for gender and age, there is a continued co-existence of low self-esteem, high levels of psychological distress, and a high risk of developing exercise dependence in individuals with weekly training amounts, exceeding hours per week. Third, by demonstrating an inverted U-relationship between weekly training amounts and mental health in recent studies. Due to the study's limitations, it is only a first step towards understanding the varying effects of exercise on stress and self-esteem, with the recommendation that future research consider qualitative research exploring more on the psychological side of females for secondary exercise addiction(Wagan et al.,2021)

- **Mooney et al. (2017)**

  According to Mooney, the chasefor perfection is standard in the fitness area, both in terms of performance and how a sportsperson should look. "*The use of performance and image enhancing drugs in fitness setting: a cross-sectional Investigation*", an article by the author, found the connection between performance-enhancing foods and goods in exercising behaviour with that of "appearance anxiety"and "self-esteem". The study explored a strong link amid sports person (whether professional or amateur) and performance-booster supplements to reach their target goals, a strong and viable association for exercise addiction. Mooney et al.,(2017) surfaced the threat created by "performance booster" drugs on health taken without medical consultation (R. Mooney et al.,2017). The author emphasised that in order to safe-guard public health and make government policy makers aware, more studies

are needed to be undertaken. “Athletes, either professional or amateur, are going to use these products to improve performance; around 41% use it for achieving their sports goal and 11% to lose weight”.Previously,the use of supplements for better execution in sports was limited to professional athletes under the guidance of coaches and nutritionists, has now spread to amateurs across the age groups, and has quickly become a public health issue” (R. Mooney et al.,2017)

3 Description of the Broad area

“The more, the better”, in line with “trying to give the best of oneself combined with high intensity”, for the purpose of high performance and endurance usually give way for addictive patterns of exercising to develop. (Lichtenstein and Jensen, 2016). Many amateur runners , particularly those who train forlong distances where stamina is a core requirement such as 5K and 10K , half-marathons(H.M.), marathons F.M.), ultra-runs, triathlons, ironman races, mountain trails, “cross fits” to improve physical fitness and performancestay on the ground for long hours and cover more milage tend to have negative effect on health coming from their exercise behaviour(Maceri, R.M. et al.,2021)

Physical activity can lead to stress in females, as too much of it can lead to over-exercising causing depression and anxiety-like symptoms if one cannot do the activity (Corazza, 2019). In literature, there are several examples of runners who preserve running regardless of instances that advocate that they need to reduce or observe day breaks from running. Further, 49% of females do obligatory exercise and achievement-related over-striving exercise (Schüler et al., 2018).Compulsive exercise or exercise addiction encompasses weight and shape regulation (Harris et al., 2022). It is a transdiagnostic symptom in close to half (48%) of females who exercise (Monell et al., 2018), thus, significantly allied with ED (eating disorders)and dietary restraint to acquire the desired body shape, so not wrong to say that compulsive exercise and exercise addiction are related to more severe eating disorders (Monell et al., 2018).

In a world where there is huge societal pressure on achieving an idealised perfect body and appearance, it has become increasingly important to meet expectations, which are hard to achieve and sometimes unhealthy. This creates a fertile ground for the association and development of disorders such as Body Dysmorphic Disorder (BDD), and exercise addiction(Freire et al., 2020). Freire et al.(2020) found a strong correlation, as 47.2% of females that had BDD also showed advanced dysfunctional exercise patterns and unhealthy

eating habits which increased chances of having eating disorder in females involved in any kind of sport. In addition, there is a strong association between female exercisers and body image anxiety. “This uneasiness is prominent among long-distance female runners, and they aremore likely to perceive themselves as addicted than their male colleagues”(Freire et al., 2020).

In the present day, women do not require support from others to participate in endurance sports. However, despite their efforts, theyare perceived as having a greater sense of dependence to be recognised as an athlete (Perry et al., 2021). Another study by Pierce, Rohaly, and Fritchley in 19997on the gender difference in exercise dependence determined that female marathon runners' exercise dependence is on the nigher side than their male counterpart, due to reasons like outward physical look, desire for a lean body(Pierce et al., 1997). Several factors, including mental and psychological factors, which influence women globally to exercise more than men are body image, eating disorders, and stress (Hailey & Bailey, 2002). females in India face many health issues; for example, it is presumed that by the end of this decade, stress and mood related health issues will be the second-highest globally, after heart disease (*India: Mental Health Disorders by Gender 2021 Statista*, 2021)

4 Objectives of the study are:

1. To studyrelationship between Exercise Addiction and stress among female amateur long-distance runners in India.
2. To study the relationship between Exercise Addiction and Eating Disorders among female amateur long-distance runners in India.
3. To study the relationship between Exercise Addiction and body image among female amateur long-distance runners in India.
4. To study the overall effect of Exercise Addiction on stress, eating disorders, and body image among female amateur long-distance runners in India.

Hypotheses

H_{a1}: There would be a significant relationship between Exercise Addiction and stress among female amateur long-distance runners in India.

H_{a2}: There would be a significant relationship between Exercise Addiction and eating disorders among female amateur long- distance runners in India.

H_{a3}: There would be a significant relationship between Exercise Addiction and Body-image among female amateur long-distance runners in India.

H_{a4}: There would be a significant impact of Eating- Disorders, Body-image, and Stress on Exercise Addiction among female amateur long-distance runners in India.

Research Questions:

Through the help of semi-structured interviews following research questions will be explored.

1 To understand the attitude and behaviour of female amateur long-distance runners in India having Exercise Addiction.

2 To explore stress, eating disorder, and body image throughinterviews in female amateur long-distance runners with Exercise Addiction.

3 To understand factors that influence Exercise Addiction among female amateur long-distance runners in the Indian context throughinterviews.

5 Research Methodology

5.1 Type of research:

In this study, we are using D*escriptive as well as Exploratory Research methods*.This research design layout will assist in recognizing why exercise addiction occurs. Furthermore, help our target population distinguish between needed and dysfunctional exercise behaviour in additionto knowing how this happens, as this population is likewise ignorant about this and remains a silent sufferer.

Operational Definition

*Exercise addiction***:** on the exercise addiction inventory, those who score more than 24 will be on the danger line for exercise dependence

Long distance runs: The distance ranges from 5k,10k,21k, 42k or more, for which events happen globally and are recognised by the designated authority.

Female runners: those runners participate in timed long-distance runs.

Eating disorder: It is any disturbance in one's eating habits, cognition and prospectivesin terms of eating or food intake.-That includes not taking balanced food, fearing being over-weight without any reason to worry or when a person being under-weight (Anorexia Nervosa) or Binge eating (Bulimia), taking food supplements without any consultancy(to avoid food) and feeling of guilt after consumption of food.The cut-off danger line in terms of points (4 or more out of 0-6 of Likert scale-7)

Body shape: BMI(Body Mass Index) calculator will be followed. It is an established parameter world- wide by doctors and nutritionists. In addition, the Appreance Anxiety Inventory(AAI) total range will measure the body shape concerns in female runners.

Stress: It is feeling of burnout which could be different for different individual. To remove ambiguity, a widely used measure "*Perceived Stress Scale"* by Cohen et al. marking will be considered (have been used on sports person).

Inquiry method: Data collection: Mixed method

5.1. Mixed Methods research

In this research combination of qualitative techniques and quantitative approaches at various stages of research will be used in Mixed-Methods Research (Tashakkori & Teddlie, 2008, p.22).

5.3 Research Design:

This will be anExploratory Sequential design. It will be a field study of hypothesis testing type.
Phase 1: Quantitative data will be collected.
Phase 2: Qualitative techniques will be applied (triangulation system)

This research design layout will assist in recognising why exercise addiction occurs and also help target population understand normal and dysfunctional exercise behaviour to know how this happens, as this population is likewise ignorant about this and remains a silent sufferer. This will assist in the know-how of this phenomenon and help predict future occurrences.

5.4 Sample Technique

Sampling technique: multistage sampling technique will be used: Purposive sampling method.

Stage 1	Purposive sampling method (323 female amateur runners from Delhi and NCR sample size- (pilot study on 25)
Stage 2	Purposive sampling method (those who will show the risk of exercise addiction on EAI) 8-10 FGD will be conducted with 6-8 participants (pilot study -1 FGD with 6 participants).

- A sample size of 350 female amateur runners will be taken from different parts of Delhi and NCR who regularly participate in long-distance events. The sample size selected using G-power software considering the population size was 323 and we took 350 for the study.
- Prior verbal or written consent will be sought from all subjects/subjects, with the assurance of the confidentiality of their obtained results.

5.4.1 Inclusion Criteria: There are specific criteria for collecting sample data. The criteria used were as follows:

- Age Range: 21 - 55 years
- Indian female long-distance non-professional runners (5km to 42 km or more)
- Minimum of two long-distance runs was completed.
- Participants should be able to read, write and speak English.
- Runners of the National Territory of Delhi are included.

5.4.2Exclusion Criteria: The exclusion criteria for the study are:

- Female professional runner.
- Runners who have not completed any timed distance run.
- Runners outside Delhi and NCR.
- Subjects with the inability to read and write English.

5.2. Data Collection

As it is mixed-method research, we will collect data in sequences.

- Data collection through → survey → Analysing Quantitative data.
- Data collection through → FGD and observation → Transcription of narratives → analysing qualitative data.(on those having scored 24 or more on inventory used)
- Sample collection process after proper approval from the authority in the particular field

A pilot study will be conducted at each stage.

This method allows for the simultaneous collection of quantitative (online or offline survey) and qualitative data (focus group discussion,semi-structured interview an observation method). The result can be merged during the overall interpretation. This will help determine the convergence, divergence, contradictions, or relationships between the two data sets. The rationale for using this method was to allow the researcher to comprehensively understand the existing problem by gathering information from different perspectives.

Quantitative research: Co-relational analysis and multivariant regression

Qualitative methods: Observation (Participant) and Focus Group discussion (triangulation method). In-depth interviews with a subset of exercise addiction may allow us to investigate adherence barriers.

5.3. TOOLS:

The following tools will be used in this study.

5.5.1. Demographic questionnaire:

A demographic questionnaire by the researcher with items including age, marital status, educational identity, professional status, self-reported height, and weight to calculate BMI (in kg/m2). exercise patterns like, years in running, number of events participated, milage per week, with reasons for running will be asked.

5.5.2. Exercise Addiction Inventory (EAI) (A. Terry, M. Griffiths &A. Szabo, 2004).

The rationale for the EAI

The EAI consists of six statements based on a behavioural model of addiction (Griffiths, 1996). Each statement corresponds to one of six components of addiction: salience, conflict, mood modification, tolerance, withdrawal, and relapse, as defined by Griff (1996) and is accompanied by a Five-point Likert scale. The statements were coded such that high scores indicated addictive exercise behaviours.

A score of 24 or above on the EAI indicates a high risk for exercise addiction, whereas a score of 13–23 indicates an exerciser with some symptoms of exercise addiction, referred to as a “committed exerciser” (Terry et al., 2004). A score of 0–12 indicates an asymptomatic exerciser showing no signs of risk for exercise addiction.

Validity and reliability of EAI

The EAI has been shown to have excellent psychometric properties (Terry et al., 2004), including good test-retest reliability (Griffiths et al., 2005), strong internal reliability, good content, and concurrent and construct validity (Terry et al., 2004). Terry et al. reported a Cronbach's alpha value of 0.84 for the EAI when administering it to 25 subjects in their study. Despite significant regional variations, the EAI is still a reliable tool for evaluating exercise addiction (Griffiths et al., 2015). This inventory has also been used by research conducted by NIMHANS on the Indian population.

5.5.3. Eating Disorder Examination Questionnaire (EDE-Q 6.0) (Fairburn &Biglin, 2008)

Rationale for using EDE-Q6.0

The EDE-Q 6.0 is a 28-item self-report questionnaire that assesses disordered eating attitudes and behaviours. Responses are on a 7-point scale (0-6): [0=no days] to 6[every day]); higher scores reflect more significant E.D. pathology. The measure provides a global score calculated from the mean of four subscales. The subscales are Restraint, Eating Concern, Shape Concern, and Weight Concern, and the global score will be used to measure E.D. pathology in the current study. This scale is widely used on non-clinical populations, including athletes, trainers etc. This scale has been used on the Indian population on female students in Tamil Nadu medical college (Arumuganathan et al., 2020).

Validity and Reliability of EDE-Q6.0

The reliability of Cronbach's $\alpha = 0.81$when computed on 25 of the sample.

5.5.5The Appearance Anxiety Inventory; (Veale et al. created the AAI (2014).

The rationale for using The Appearance Anxiety Inventory

The Appearance Anxiety Inventory (AAI) is a ten-question self-report scale that assesses the cognitive and behavioural aspects of body image anxiety in general and body dysmorphic disorder (BDD) in particular. This scale can be used in conjunction with a BDD diagnostic procedure as well as for symptom monitoring during treatment. Measuring the frequency of avoidance behaviour and threat-monitoring (e.g., checking, self-focused attention) that are typical of a response to a distorted body image; each item is scored on a 5-point Likert scale from 0 ('not at all') to 4 ('all the time'). The Appearance Anxiety Inventory was developed as a tool to measure a change in psychotherapy patients suffering from BDD, yielding one summary score with a maximum of 40, with higher scores indicating a higher occurrence of

appearance anxiety. The scale has been used on the non-clinical community, including athletes. This scale was already used in the study of the Indian population(Kumar Anil et al., 2020).

Validity and reliability of AAI

The AAI was found to have good convergent validity with correlations of.55 with the clinician-rated YBOCS-BDD and.58 with the PHQ9.

With a Cronbach Alpha of.86, on the sample size of 25 internal consistency was found high for .

5.5.4. Perceived Stress Scale (PSS)(Sheldon Cohen, 1983).

Rationale for PSS-10

The Perceived Stress Scale (PSS) is a well-known stress assessment tool. While the tool was created in 1983, it is still famous for helping and understand how different situations affect our feelings and perceived stress. The 10 questions on this on 5-point Likert scale from never(0)to very often(4), inquire about your feelings and thoughts over the previous month. It is a self-administered questionnaire with ten items that assess the degree to which stressful situations are perceived. Each respondent takes 15 minutes to administer the scale. Individual PSS scores can range from 0 to 40, with higher scores indicating higher perceived stress. Scores between 0 and 13 are considered low stress; scores between 14 and 26 are considered moderate stress; and scores between 27 and 40 are considered high perceived stress. Although some of the questions are similar, there are differences, and you should treat each one separately. The best strategy is to respond quickly. This scale is culture-free and can be used on cross-demography. The perceived stress scale (PSS) is the most frequently used psychological tool for measuring the perception of stress. The scale also contains several direct questions about the existing stress levels encountered and has been used on the Indian population (Priyamkari et al., 2020).

Reliability of PSS

Its Cronbach score is α=0.82.making it a good scale to be used for the required sample(pilot study on the 25 female runners).

5.4. Statistical analysis

Appropriate Statistical Methods will be used for quantitative analysis by SPSS (statistical package for Social Science 23, IBM).

- Descriptive Statistic

- Inferential statistics – Independent t-test., Correlational methods, ANOVA, and Regression analysis
- Qualitative analysis

6 Expected Outcome of the Research

The research will help achieve the study's objectives and analysis of the symptoms of exercise addiction, including mood modification, withdrawal symptoms, conflict, and relapse. With the help of effective methodology and measuring tools, the research outcome is expected to be received well by DSM and ICD (Szabo, 2018). With the addition of exercise addiction as a disorder, those who are being ignored today and suffering will get proper treatment. It has been analyzed from the research that, at present, many females are developing their professional careers and becoming addicted to achieving physical fitness and exercise to release their stress from the workload. Before exercise could be harmful, this could be controlled. Further, by understanding exercise addiction, we can also understand precipitating factors for eating disorders and body shaping, which will help mental health workers better prepare for their intervention. The research is expected to obtain in-depth details of the demographics in which these females are present and contribute to the risk of developing exercise addiction. (Strahler et al., 2021). The increase in the addiction to exercise in females shows that in the current time, females want to look and keep themselves fit to present themselves better in society. Therefore, a community awareness program could be planned. Coaches and trainers would be better equipped to understand this problem before it goes out of hand. Policy making for supplements could be made to prevent the harmful physiological effect on women in India already having malnutrition (Women's Nutrition, 2019, Unicef.org). People suffering from exercise addiction are silent sufferers, especially females with diverse roles.

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